DETAILED ACTION

1. Acknowledgement is made of the amendment received on 04/06/2009.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephonic interview with Shayne X. Short on July 14, 2009.

The claims in the application have been amended as follows:

In claims:

(1) Replace claim 1 with:

A zero excess bandwidth modulation method, the method comprising:

encoding a plurality of information bits, thereby generating a plurality of encoded bits;

puncturing at least one of the plurality of encoded bits so that a plurality of remaining encoded bits includes a first encoded bit followed by a second encoded bit;

after performing the puncturing, rearranging an order of the plurality of remaining encoded bits so that the first encoded bit follows the second encoded bit, thereby generating a sequence of discrete-valued modulation symbols;

TH (Tomlinson-Harashima) precoding of the sequence of discrete-valued modulation symbols according to a predetermined overall channel symbol response having spectral zeroes at edges of a corresponding Nyquist band, thereby generating a plurality of discrete-time transmit signals at a modulation rate;

inserting the plurality of discrete-time transmit signals into means to generate a continuous-time transmit signal by appropriate discrete-time filtering, digital-to-analog conversion (DAC), and continuous-time filtering;

ensuring, within the means to generate the continuous-time transmit signal, that the continuous-time transmit signal has spectral zeroes at the edges of the corresponding Nyquist band, which equals a bandwidth of the available transmission band, and that any spectral components outside of the available transmission band are substantially suppressed; and

launching the filtered, continuous-time transmit signal into the communication channel.

(2) Replace claim 3 with:

The method of claim 1, further comprising:

mapping the rearranged plurality of remaining encoded bits into a plurality of modulation symbols according to a symbol constellation and a corresponding mapping function, thereby generating the sequence of discrete-valued modulation symbols.

(3) Replace claim 4 with:

The method of claim 1, further comprising:

encoding a subset of information bits of the plurality of information bits into the plurality of encoded bits; and

mapping the rearranged plurality of remaining encoded bits and at least one uncoded information bits into a plurality of modulation symbols according to a symbol constellation and a corresponding mapping function, thereby generating the sequence of discrete-valued modulation symbols.

(4) Replace claim 13 with:

A zero excess bandwidth modulation communication transmitter, the transmitter comprising:

an encoder and symbol mapper that:

encodes a plurality of information bits, thereby generating a plurality of encoded bits;

performs puncturing at least one of the plurality of encoded bits so that a plurality of remaining encoded bits includes a first encoded bit followed by a second encoded bit; and

after performing the puncturing, rearranges an order of the plurality of remaining encoded bits so that the first encoded bit follows the second encoded bit, thereby generating a sequence of discrete-valued modulation symbols;

a TH (Tomlinson-Harashima) precoder that performs precoding of the sequence of discrete-valued modulation symbols according to a predetermined overall channel symbol response having spectral zeroes at edges of a corresponding Nyquist band, thereby generating a plurality of discrete-time transmit signals at a modulation rate;

means to generate a continuous-time transmit signal by appropriate discrete-time filtering, digital-to-analog conversion (DAC), and continuous-time filtering;

wherein the plurality of discrete-time transmit signals is inserted into the means; wherein the means ensures that the continuous-time transmit signal has spectral zeroes at the edges of the corresponding Nyquist band, which equals a bandwidth of the available transmission band, and that any spectral components outside of the available transmission band are substantially suppressed; and

wherein the filtered, continuous-time transmit signal is launched into the communication channel from the transmit filter.

(5) Replace claim 15 with:

The transmitter of claim 13, wherein:

the encoder and symbol mapper maps the rearranged plurality of remaining encoded bits into a plurality of modulation symbols according to a symbol constellation

and a corresponding mapping function, thereby generating the sequence of discrete-valued modulation symbols.

(6) Replace claim 16 with:

The transmitter of claim 13, wherein:

the encoder and symbol mapper encodes a subset of information bits of the plurality of information bits into the plurality of encoded bits; and

the encoder and symbol mapper maps the rearranged plurality of remaining encoded bits and at least one uncoded information bits into a plurality of modulation symbols according to a symbol constellation and a corresponding mapping function, thereby generating the sequence of discrete-valued modulation symbols.

(7) Replace claim 25 with:

The method of claim 1, further comprising:

after rearranging the order of the plurality of remaining encoded bits, puncturing at least one of the rearranged plurality of remaining encoded bits.

(8) Replace claim 27 with:

The transmitter of claim 13, wherein:

after rearranging the order of the plurality of remaining encoded bits, the encoder and symbol mapper punctures at least one of the rearranged plurality of remaining encoded bits.

Allowable Subject Matter

3. Claims 1-28 are allowed.

4. The following is a statement of reasons for allowable subject matter:

The prior art of record, Cherubini et al. does not teach or suggest puncturing at least one of the plurality of encoded bits so that a plurality of remaining encoded bits includes a first encoded bit followed by a second encoded bit; after performing the puncturing, rearranging an order of the plurality of remaining encoded bits so that the first encoded bit follows the second encoded bit, thereby generating a sequence of discrete-valued modulation symbols

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kabir A. Timory whose telephone number is 571-270-1674. The examiner can normally be reached on 6:30 AM - 3:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kabir A Timory/

Examiner, Art Unit 2611

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611